OCCULT FRACTURE-SUBLUXATION OF THE MIDTARSAL JOINT

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This paper describes a potentially disabling lesion which masquerades as an innocent sprain of the ankle. The causative injury is apparently trivial, such as a twist of the foot or ankle, and the clinical appearance simulates an ankle sprain. Routine radiographs of the ankle often fail to show bony injury.

Persistent disability compels further investigation. Supero-inferior radiographs of the foot reveal an avulsion fracture of the navicular involving the tubercle, and a crush fracture involving the calcaneo-cuboid joint is shown on the oblique projection. Subluxation of the midtarsal joint results in instability and deformity which increases on bearing weight. Disability persists unless the true nature of the lesion is recognised and treated.

ILLUSTRATIVE CASE REPORT

A woman of sixty-five twisted her foot on reaching the last step while going downstairs. She suffered severe pain in the foot which was followed by marked swelling extending to the inframalleolar region, and ecchymoses of the lateral and medial side of the foot with encroachment on the sole on the medial aspect. Routine radiographs taken of the ankle in the emergency department were reported as being normal (Fig. 1). She was treated by the application of a tensor bandage as for a sprain of the ankle. Persistent symptoms and severe pain on attempting to bear weight prompted further investigation. Subsequent radiographs of the foot showed an avulsion fracture of the tubercle of the navicular bone and a fracture involving the calcaneo-cuboid joint (a fracture-subluxation of the midtarsal joint) (Figs. 2 and 3).

Four further cases presented in a similar manner, each being diagnosed and treated initially as an ankle sprain. The true nature of the lesion only became evident after persistent symptoms resulted in further radiography of the foot. The radiographic findings were similar in each case. On resuming weight-bearing there was a fullness on the medial side of the foot with depression at the midtarsal joint and abduction of the forefoot (Fig. 4).
MECHANISM OF INJURY

The forefoot is forced into abduction, resulting in an avulsion fracture of the navicular bone, the fragment remaining attached to the tibialis posterior tendon. The forefoot, freed of its medial stay, swings further into the abducted position, producing a compression fracture involving the calcaneo-cuboid joint. The result is an unstable fracture-subluxation of the midtarsal joint (Fig. 5).

MANAGEMENT

Only one patient was seen within the first week of injury. In this instance examination under an anaesthetic revealed marked instability of the midtarsal joint. After reduction of
the midtarsal subluxation the avulsed navicular fragment was reattached and the calcaneo-
cuboid joint was arthrodesed (Fig. 6). Eighteen months after operation the patient was free
from symptoms and had returned to full activity.

The first patient was seen in 1960, but she refused operation. With conservative treatment
she suffered considerable discomfort and marked limitation of walking activity.

In two further patients calcaneo-cuboid fusion was performed at two and seven weeks. Both
patients resumed normal activity but exhibited some residual disability. Another patient
also refused operation and two years later still had pain and restricted ability to walk.

**FIG. 5**

Figure 5—Showing the mechanism of a midtarsal fracture-subluxation.

**FIG. 6**

Figure 6—Radiograph showing the healed navicular bone and fusion of the calcaneo-cuboid joint.

**DISCUSSION**

Awareness of this injury is important. Early recognition and treatment is needed to
avoid continued disability. Of clinical importance are the ecchymoses on both sides of the
foot, especially the encroachment on the sole of the foot. This is possibly secondary to the
tearing of the remaining slips of insertion of the tibialis posterior tendon as was noted at
operation in one case. There is tenderness over the navicular bone and the calcaneo-cuboid
joint. In the late case persisting pain on weight-bearing with fullness on the medial side with
depression of the midtarsal joint was noted.

Because the lesion masquerades as an ankle sprain oblique radiographs of the foot should
be taken in addition to the routine views of the ankle in order to avoid overlooking the lesion.

In the early case the treatment outlined may suffice, but in the late case with fixed deformity
it may be necessary to fuse the calcaneo-cuboid joint with correction of the deformity and
elongation of the lateral side of the foot, to correct the loss of length due to compression
fracture at the calcaneo-cuboid joint. Treatment by plaster immobilisation alone has resulted
in persistent disability.

**SUMMARY**

1. Occult fracture-subluxation of the midtarsal joint is described and illustrated by a typical
case.
2. Comments are made on the mechanism of injury, diagnostic features and treatment.